

What is claimed is:

1. A connector structure of a permanent magnet DC motor, the motor having brushes and a metal motor housing, the connector structure comprising:
 - a connector body disposed outside of the metal motor housing,
 - leads housed by the connector body and being constructed and arranged to be connected to a source of power to power the motor,
 - a printed circuit board mounted with respect to the connector body and carrying at least one electro-magnetic interference (EMI) suppression component constructed and arranged to suppress EMI generated by the motor, the leads being electrically connected with the printed circuit board so that current can be provided through the printed circuit board to the brushes, and
 - a contact member electrically connected between the printed circuit board and the metal motor housing so that the at least one EMI suppression component couples the brushes of the motor to the metal motor housing thereby causing the metal motor housing to become an AC ground and EMI shield.
2. The connector structure of claim 1, wherein the at least one EMI suppression component is a surface mounted device.
3. The connector structure of claim 1, wherein the at least one EMI suppression component includes a capacitor.
4. The connector structure of claim 1, wherein the leads include ends that are soldered to the printed circuit board.
5. The connector structure of claim 1, further including a cover structure molded over the printed circuit board.

6. The connector structure of claim 5, wherein the connector body includes a recess, the circuit board being mounted to the connector body within the recess.
7. The connector structure of claim 6, wherein the cover structure is constructed and arranged to fill the recess and cover the printed circuit board.
8. The connector structure of claim 1, wherein the leads extend generally transversely with respect to the printed circuit board.
9. A permanent magnet DC motor having electro-magnetic interference (EMI) suppression, the motor including:
 - a metal motor housing; and
 - a brush card assembly comprising:
 - brushes,
 - leads constructed and arranged to be coupled with a source of power to power the motor,
 - a housing having a first portion housing the brushes and being operatively associated with the metal motor housing, and a second portion integral with the first portion and housing the leads,
 - a printed circuit board mounted with respect to the second portion of the housing and carrying at least one electro-magnetic interference (EMI) suppression component constructed and arranged to suppress EMI generated by the motor, the leads being electrically connected to the printed circuit board so that current can be provided through the printed circuit board to the brushes, and
 - a contact member electrically connected between the printed circuit board and the metal motor housing so that the at least one EMI suppression component couples the brushes to the metal motor housing thereby causing the metal motor housing to become an AC ground and EMI shield.

10. The motor of claim 9, wherein the at least one EMI suppression component is a surface mounted device.
11. The motor of claim 9, wherein the at least one EMI suppression component includes a capacitor.
12. The motor of claim 9, wherein the leads include ends that are soldered to the printed circuit board.
13. The motor of claim 9, wherein the second portion of the housing includes a recess, the circuit board being mounted within the recess.
14. The motor of claim 13, further including a cover structure, the cover structure being constructed and arranged to fill the recess and cover the printed circuit board.
15. The motor of claim 9, wherein at least a portion of each lead extends generally transversely with respect to the printed circuit board.
16. The motor of claim 9, wherein the metal motor housing includes an open end and the first portion of the housing is disposed within the open end in such a manner that at least a portion of the contact member contacts an interior surface of the metal motor housing.
17. A method of providing electro-magnetic interference (EMI) suppression for a permanent magnet DC brush motor, the method including the step of:
providing a permanent magnet DC motor having a metal housing, brushes, and connector structure extending outside of the metal housing, the connector structure housing leads to power the motor,

mounting a printed circuit board within the connector structure, the printed circuit board having at least one EMI suppression component for suppressing EMI of the motor,

electrically connecting the leads to the printed circuit board so that current can be provided through the printed circuit board to the brushes,

providing a contact member electrically connected between the printed circuit board and the metal housing so that the at least one EMI suppression component couples the brushes to the metal housing thereby causing the metal motor housing to become an AC ground and EMI shield, and

molding a plastic material over the printed circuit board to cover the circuit board.